

ABSTRACT

A voltage regulator includes a two-stage feedback circuit for driving a controller
5 formed by a transistor 10. The feedback circuit includes an error amplifier 30 and an
output amplifier 20, a simple compensating circuit in the form of a resistor R_{sz} inserted
between the inverting input 22 and the non-inverting input 24 of the output amplifier 20
resulting in a high phase reserve of the feedback circuit. The resistor R_{sz} limits the gain
of the error amplifier 30 for small load currents by reducing its effective output
10 impedance. This compensating circuit results in the two-stage feedback circuit being
highly stable even when very low load currents are involved. This now makes it possible
to achieve a very simple linear voltage regulator architecture totally integrated on a
single chip. It is especially in battery-powered handhelds such as e.g. mobile phones or
electronic organizers that this is important since these devices are often on standby with
15 a low current consumption and activated for use only occasionally.